

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



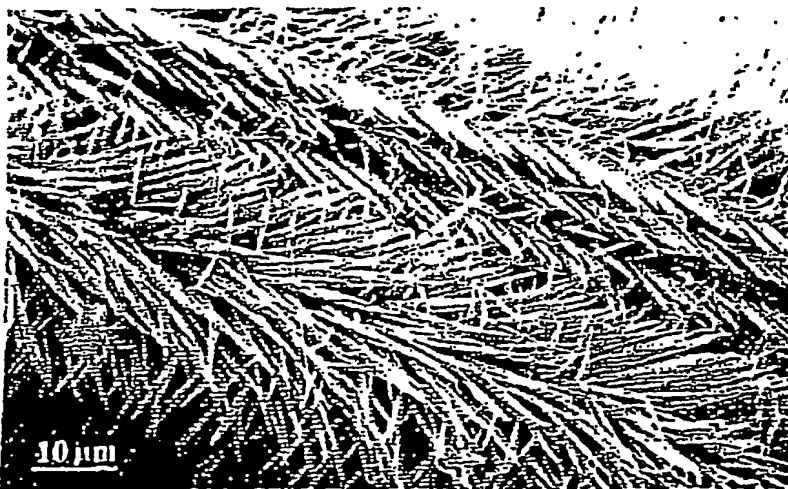
(43) International Publication Date
12 February 2004 (12.02.2004)

PCT

(10) International Publication Number
WO 2004/013884 A1

- (51) International Patent Classification⁷: H01J 1/304, 1/312 (74) Agent: ITEM d. o. o.; Resljeva 16, 1000 Ljubljana (SI).
- (21) International Application Number: PCT/SI2003/000027
- (22) International Filing Date: 23 July 2003 (23.07.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
P-200200189 2 August 2002 (02.08.2002) SI
- (71) Applicant (for all designated States except US): INSTITUT "JOSEF STEFAN" [SI/SI]; Jamova 39, 1000 Ljubljana (SI).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): NEMANIC, VENCESLAV [SI/SI]; Vikrce 5b, 1211 Ljubljana (SI). ZUMER, Marko [SI/SI]; Zaucerjeva 20, 1000 Ljubljana (SI). MRZEL, Ales [SI/SI]; Tesovnikova 61, 1000 Ljubljana (SI). REMSKAR, Maja [SI/SI]; Taborska 31, 1290 Grosuplje (SI). MIHAILOVIC, Dragan [SI/SI]; Valvasorjeva 10, 1000 Ljubljana (SI).
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:**
— with international search report
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: USE OF QUASI-ONE-DIMENSIONAL TRANSITION METAL TERNARY COMPOUNDS AND QUASI-ONE-DIMENSIONAL TRANSITION METAL CHALCOGENIDE COMPOUNDS AS ELECTRON EMITTERS



(57) **Abstract:** The present invention pertains to the use of quasioe-dimensional transition metal ternary compounds $M_xH_yHa_z$ (where M is a transition metal Mo, W, Ta, Nb; H is sulfur (S), selenium (Se), tellurium (Te); Ha is iodine (I)) and of doped quasi-one-dimensional transition metal ternary compounds $M_xH_yHa_z$, (where M=Ta, Ti, Nb; H is sulfur (S), selenium (Se), tellurium (Te); Ha is iodine (I)) with elements of group Ib (silver (Ag), gold (Au), or copper (Cu)) as electron emitters under the influence of an external electric field. The percentage of quasi-one-dimensional transition metal ternary compounds and/or doped quasi-one-dimensional transition metal ternary compounds doped with elements of group Ib in the active

material ranges from 0.01 to 99.9 the rest consisting of additives in the form of conducting, non-conducting or semi-conducting compounds or composites. Electron emission takes place at a pressure below 1 mbar.